

Kicking up a stink:

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Is the brown marmorated stink bug our next invasive pest?





Stink Bug
Halyomorpha halys

H *alyomorpha halys*, known as the brown marmorated stink bug, seems to be the next most likely invasive insect pest to hit the UK, following hot on the ‘heels’ (tarsi?! *Tech Ed.*)

of the Asian tiger mosquito, Asian hornet and the harlequin ladybird. Perhaps it is here already, unreported or undetected!

Pest Control News examines the situation in Europe, to give readers an idea of what to expect from the ‘BMSM’.

Expect this: to be inundated with enormous numbers of this overwintering invasive pest!

News articles from 2014 had already highlighted the potential for this stink bug to reach the UK. Natural History Museum entomologist Max Barclay and Chris Malumphy (entomologist at Fera) both commented on the likelihood of populations establishing in South England, with emphasis on the agricultural pest status of this insect and the public nuisance effects.

However, it was only really until July 2017, when Marcus Schmidt (Urban Pest Advisory Service, Zurich) gave a paper at the 9th International Conference on Urban Pests, Birmingham UK, that interest in this species from a UK pest control industry viewpoint started to pick up. Marcus’ discussion of the public nuisance impacts of the invasive brown marmorated stink bug in Switzerland proved particularly intriguing.

Impacts in Europe

Marcus reported on the impacts of *H. halys*, which are considered a nuisance to people because of the aggregation clusters they form in buildings when seeking out hibernation sites during autumn.

From a public health pest control point of view this is their main impact, so think cluster flies and harlequin ladybirds.

Reports in Switzerland also include complaints of damage to garden fruits such as apricots, nectarines and cherries. There were also reports of damage to raspberries and blackberries grown in gardens. It is from here that they invade houses, sometimes in great numbers. One report referred to significant economic damage caused to a pepper culture of a vegetable producer in the Zurich region.

From a public health pest control standpoint *H. halys* is predominantly a nuisance pest, with bugs taking refuge in roller-shutter casings, behind panels with air space and under roofs. They are also found on walls, windows and door frames.

Much like other overwintering insect pests, they are not just a nuisance when finding overwintering sites in autumn months. They become active in their refuges during warm winter days and in spring (e.g. March onwards) when temperatures start to rise.

So, two peaks of nuisance activity can be expected. It is not just their presence that can be an irritating nuisance – the infamous ‘stink’ deserves a mention! If crushed or disturbed the bugs produce a typical strong odour that is both unpleasant and persistent.



Stink Bug Nymph
Halyomorpha halys

Allergic reactions to BMSB

Reports from the USA indicate that BMSB can produce allergic reactions (rhinitis and/or conjunctivitis) in individuals who are sensitive to the bugs' odour (the defensive chemicals can be an aeroallergen). Individuals sensitive to the odours of cockroaches and ladybirds may be particularly affected by BMSB. Additionally, if the insects are crushed or squashed against exposed skin, they can produce dermatitis at the point of contact.

Significant pest of plants

In the USA, *H. halys* causes over \$37 million of losses in apple production, where it has become a serious pest. Worldwide, it has over 300 reported host plants, causing feeding damage and spreading plant pathogens. It really is a plant pest of great significance in certain regions. Thankfully, *H. halys* is not likely to impact significantly on UK crops as our mercifully low summertime temperatures will restrict it to only a single generation per annum. Thinking about temperature, *H. halys* needs quite warm conditions to develop – over 14°C, which will restrict its distribution to suitable parts of the UK.

The route in

One suspicion is that *H. halys* made its way in via ornamental plants (Wermelinger, 2008). Marcus revealed (in his ICUP 2017 paper) personal communications with researcher Tim Haye that seem to give a realistic explanation of the invasion route of *H. halys*. 'Zurich is the partner city of Kunming, China, and in 1994 a Chinese garden was donated to Zurich by Kunming. In 1998, the roof tiles had to be replaced because they had cracked in the cold winter. The new tiles were imported to Zurich in large boxes directly from the imperial brickworks near Beijing. These boxes may have contained overwintering adults.' Intriguingly, a scientific paper published in August 2017, just after ICUP 2017, revealed genetic evidence of a Chinese origin of the brown marmorated stink bug in Switzerland (Valentin *et al.*, 2017), before spreading to neighbouring countries in Europe.

Where else is it found?

H. halys is native to Asia and is found in China, Japan, Korean Republic and Taiwan.

In Europe, it has been reported in the following countries: France (2012), Germany (2001), Greece (2011), Hungary (2013), Italy (2012), Lichtenstein (2004) and Switzerland (2004).

It is also present in the United States of America (1996) and the most recent new record is Chile (2017).

How close has it been to making it to the UK?

Very close in fact and it is likely here already and unreported / unrecognised. It has previously been found on timber imported from the USA that was destined for the UK but thankfully got intercepted. Other interceptions before reaching the UK were: in passenger luggage from the USA; stone imported from China and with clothes from the USA.

H. halys is capable of flight, meaning it can move from plant to plant within growing seasons, aiding its local dispersal. Over greater distances, it can be spread by movement of host plants as well as transport of other products or even vehicles. It can certainly get around.

Recognising the BMSB

Defra have produced a pest factsheet for the BMSB and their description of key characteristics for recognition is reproduced here.

'Adults are approximately 17 mm long and are generally brown in colour. Distinguishing characteristics found on adult H. halys include lighter bands on the antennae and darker bands on the membranous, overlapping part at the rear of the wings. They also have patches of coppery or bluish metallic-coloured punctures on the head and pronotum. The scent glands are located on the dorsal surface of the abdomen and the underside of the thorax. It is these glands that are responsible for producing the pungent odour that characterizes stink bugs.'

For interest, marmorated means 'having a marbled or streaked appearance'.

What to do if you find a BMSB?

Firstly, seek out a reliable identification from an experienced entomologist providing an insect identification service.

Secondly, if confirmed as a BMSB, report the finding to Plant Health authorities in the UK.

Although not a notifiable pest, reports of suspected outbreaks of brown marmorated stink bug would be appreciated by the relevant authority, to help monitor findings:

For England and Wales, contact your local APHA Plant Health and Seeds Inspector or the PHSI Headquarters, Sand Hutton, York. Tel: 01904 405138

Email: planthealth.info@apha.gsi.gov.uk

Control measures

Experience from providers of technical advice to the pest control industry in Europe is that vacuuming aggregations of BMSB, followed by disposal, can be successful and there is not always a need for chemical treatments. BMSB could be disposed of by freezing and then depositing in a secure outside bin. Proofing the cracks and crevices around doorways and windows with a silicone-based sealant (or equivalent) could assist in prevention.

If an insecticide treatment is deemed necessary, e.g. where there is immediate threat of food contamination, a product with the label phrase 'crawling insects' or similar should be selected as public health insecticides are not known to list bugs of the family pentatomidae / shield bugs on the label. Pyrethroid insecticides have been shown to be effective in controlling BMSB. With an eye on Integrated Pest Management, there is research into egg parasitoids, predatory insects and aggregation pheromones.

Remember, when you see a suspected brown marmorated stink bug, make sure you 'kick up a stink' and get it checked out.